The SHAPE ENERGY academic workshop

current landscapes and future directions for European energy research

SHAPEENERGY

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Contents

Contents 2
1. Introduction 3
2. Setting and participants 4
2.1. Representing wider energy networks and projects 4
2.2. Disciplinary diversity 4
2.3. Cross-European representation 5
2.4. Gender balance 5
2.5. Participants 5
3. Structure of the day 6
4. Creating an interdisciplinary 'energy lexicon' 8
5. Research & Innovation Agenda activity 9
6. Future energy-SSH research priorities 11
7. Summary 14
8. Acknowledgements 15
9. Appendices 16
9.1. Appendix 1. Full workshop agenda 16
9.2. Appendix 2. Future energy-SSH research priorities report 18

1. Introduction

SHAPE ENERGY[1] - *Social sciences and Humanities for Advancing Policy in European Energy* - is a two-year platform funded under the EU's Horizon 2020 energy work programme. It represents a €2m investment to strengthen and promote Europe's energy-related Social Science and Humanities (energy-SSH) capabilities.

Energy policy in recent decades has been driven, in large part, by innovations in Science, Technology, Engineering and Mathematics (STEM). This focus has under-utilised understandings developed by the Social Sciences and Humanities (SSH). European funding of energy research and innovation has similarly tended to prioritise STEM, whilst overlooking potentially fruitful avenues of energy-SSH. Overcoming this is not however a simple matter; significant challenges exist. Indeed different disciplines (both within SSH and between SSH/STEM) often approach energy-related issues in fundamentally different ways. In order to meet (or indeed re-evaluate) ambitious national and international low-carbon energy targets, it is essential that European energy policy is grounded in a better understanding of where and how energy-SSH disciplines differ, how they correspond with one another, and what implications this has for those who may wish to use insights from energy-SSH (e.g. policymakers, industry). It is in this context that we organised this one-day workshop for senior academics.

The workshop formed a central strand of SHAPE ENERGY's scoping work. Indeed, being organised within the first month of the project (February 2017) it has already led to some of the earliest project outputs, including a report feeding into the framing of calls within the next Horizon 2020 energy work programme (see section 6. and Appendix 2.), and the SHAPE ENERGY Lexicon (see section 4.) which was presented at the eceee summer study on 1st June 2017. Together with other extensive scoping activities - including four annotated bibliographies[2]; four cross-cutting theme reports[3]; a call for evidence with over 200 respondents; a stakeholder needs review with input from business, NGOs, policy workers and European citizens; and an online searchable researcher database[4] - findings from this workshop will directly shape the organisation of upcoming SHAPE ENERGY activities and project outputs. The workshop brought together high profile scholars to discuss the foundations of a European strategic research agenda for SSH in the energy field. Given this key opportunity to engage a cross-section of the academic community in-depth, we wanted to: reflect on the current state (and possible future) of energy-SSH research; consider how best to strengthen dialogue among European energy-research stakeholders; and how to best provide policy-related advice to European policymakers.

This short report is organised as follows. Firstly the expertise and experience of participants is discussed, before the agenda of the day is detailed including the keynote presentations. In the following three sections each of the workshop's three interactive sessions are discussed, concerning: (i) the SHAPE ENERGY Lexicon; (ii) the Research & Innovation Agenda 2020-2030 (a future output from the Platform); and (iii) future priorities for energy-SSH research in Europe. Finally, a short summary of the event is given.

1 shapeenergy.eu. All SHAPE ENERGY produced publications referenced in the report are, or will be, freely available via this website.

2 On: (1) Energy efficiency and using less; (2) Competitive, secure, low-carbon energy supply; (3) Energy system optimisation and smart technologies; and (4) Transport sector decarbonisation. Available via website above.

3 On: (1) Energy and gender; (2) Energy and multi-stakeholder interests; (3) Energy justice; and (4) Energy and the active consumer. Available via website above.

4 See https://shapeenergy.eu/index.php/researcher-database/.

2. Setting and participants

The workshop took place in King's College (Cambridge, UK) on Friday 24th February 2017. It was a unique gathering of leading academics across a wide range of disciplines, working to contrast and compare disciplinary perspectives concerning the future of low-carbon energy in Europe. We invited leaders of various energy-SSH - as well as some specific (non-energy) SSH, and STEM - communities to participate in the workshop. Attendees thus included journal editors, academic network directors, and co-ordinators of large energy projects. In addition, a little over one-third of the participants were from the SHAPE ENERGY consortium itself, to enable time for networking and deeper discussions about each partner's SHAPE ENERGY activities.

We had a number of priorities for the make-up of the group which we very carefully considered when extending invitations; four of these priorities are detailed next. Of course, there were many other leading scholars we could have invited, however it was important to keep the group size reasonably small to enable in-depth discussion during the one-day event.

2.1. Representing wider energy networks and projects

Firstly, with a limited number of places available to enable in-depth working, it was a priority to involve those who represented wider (energy-related) networks in some way, and thus were able to bring wider conversations to the table. Thus participants included Editors-In-Chief, Subject Editors, and members of the Editorial Board of: Energy Research & Social Science, Nature Energy, Journal of Cleaner Production, and WIREs Climate Change. Chairs or coordinators of a number of energy-related networks were present, including the Political Economy of Energy Transitions (POLET) network and the Energy Anthropology Network of the European Association of Social Anthropologists, as well as members of the Club of Rome, ENERGY-TRANS, the Centre for Sustainable Energy Studies (CenSES), and the Centre for Understanding Sustainable Prosperity (CUSP)[5]. Amongst participants were also several Principal Investigators of large current EU-funded energy projects (e.g. ENERGISE, Horizon 2020; CASPI, ERC), as well as partners of other large EU-funded energy projects (e.g. Nature4Cities, DR-BOB, MEDEAS, Build Upon, CIMULACT, Energy in Water - all Horizon 2020[6]).

2.2. Disciplinary diversity

Breadth of experience across academic disciplines was critical to enable meaningful discussion of disciplinary differences and interdisciplinary working, and in particular it was vital to achieve a diversity across the spectrum of SSH disciplines. The disciplinary expertise of participants included (at least): Architecture; Built Environment; Chemistry; Communication Studies; Economics; Engineering; Environmental Psychology; Environmental Sciences; Environmental Social Sciences; Ethics; Geography; International Relations; Law; Mathematics; Physics; Political Science; Psychosocial Studies; Science and Technology Studies; Social Anthropology; Sociology; and Sustainability Science.

5 Further information on these networks can be found via their respective websites: (i) http://polet.network/; (ii) https://www.easaonline.org/networks/ean/index.shtml; (iii) https://www.clubofrome.org/; (iv) http://www.energy-trans.de/english/index.php; (v) http://www.ntnu.edu/censes; and (vi) http://www.cusp.ac.uk/.

6 Further information on these projects can be found via their respective websites: (i) European Network for Research, Good Practice and Innovation in Sustainable Energy - http://www.energise-project.eu/; (ii) Low-Carbon Lifestyles and Behavioural Spillover - http://sites.cardiff.ac.uk/caspi/; (iii) Nature4Cities - https://www.nature4cities.eu/; (iv) Demand Response in Blocks of Buildings - http://www.dr-bob.eu/; (v) Modelling Energy system Development under Environmental And Socioeconomic constraints - http://www.medeas.eu/; (vi) Build Upon - http://buildupon.eu/; (vii) Citizen and Multi-Actor Consultation on Horizon 2020 - http://www.cimulact.eu/; and (viii) Energy in Water - https://www.energyinwater.eu/.

2.3. Cross-European representation

Our participants worked in institutions located in Belgium, the Czech Republic, Denmark, France, Germany, Hungary, Italy, Ireland, the Netherlands, Norway, Poland, Spain, Sweden, Turkey, and the UK. Excluding the six organisers and keynote speakers, pan-European representation was well balanced, with six participants from Northern Europe, four from Eastern Europe, six from Southern Europe, and five from Western Europe.

2.4. Gender balance

Consideration of gender is one of the key themes of the SHAPE ENERGY Platform (see for example our cross-cutting theme report on *Energy & gender*[7]). We achieved an almost equal gender balance with 13 women and 14 men participating.

2.5. Participants

The full list of participants and keynote speakers on the day was as follows:

- Lenke Balint, Anglia Ruskin University [SHAPE ENERGY project manager];
- Prof. Ugo Bardi, University of Florence;
- Dr Christian Büscher, Karlsruhe Institute of Technology;
- Prof. Aleh Cherp, Central European University & Lund University;
- Dr Břetislav Dančák, Masaryk University;
- Dr Nicky Dean, Nature Energy;
- Dr Frances Fahy, National University of Ireland Galway;
- Dr Karina Firkavičiūtė, European Commission [virtual attendance];
- Dr Chris Foulds, Anglia Ruskin University;
- Dr Sara Heidenreich, Norwegian University of Science & Technology;
- Prof. Aled Jones, Anglia Ruskin University;
- Dr Aleksandra Lis, Adam Mickiewicz University;
- Prof Patrizia Lombardi, Politecnico di Torino;
- Dr Rodrigo Lozano, University of Gävle;
- Prof. Aurèlia Mañé Estrada, University of Barcelona;
- Dr Anders Melin, Malmö University;
- Prof. Massimiliano Montini, University of SienaUniversity of Siena;
- Dr Ruth Mourik, Duneworks;
- Dr Nathalie Ortar, École Nationale des Travaux Publics de l'État;
- Dr Rosie Robison, Anglia Ruskin University;
- Prof. Ramazan Sari, Middle East Technical University;
- Dr Gerd Schönwälder, European Commission [virtual pre-recorded keynote];
- Dr Giulia Sonetti, Politecnico di Torino;
- Prof. Benjamin Sovacool, University of Sussex & Aarhus University;
- Patrick Sumpf, Karlsruhe Institute of Technology;
- Dr Aleksandra Wagner, Jagiellonian University;
- Prof. Lorraine Whitmarsh, Cardiff University.

7 Anfinsen, M. and Heidenreich, S., 2017. *Energy & gender - a social sciences and humanities crosscutting theme report.* Cambridge: SHAPE ENERGY.

3. Structure of the day

In designing the workshop, we aimed to enable participants to:

- discuss the current state (and possible future) of energy-SSH research;
- react to the European Commission's ongoing strategy in this area;
- reflect on the future of energy research and innovation in Europe (e.g. via Horizon 2020);
- identify where interdisciplinary collaborations have been most productive/overlooked (e.g. in terms of disciplines, topics, European countries), and examine some of the reasons for this;
- debate which areas of energy research have received the most/least attention and funding, and the implications of this for Europe;
- consider how best to strengthen dialogue among European energy-research stakeholders and provide policy-related advice to European policymakers; and
- directly influence the directions taken by the SHAPE ENERGY Platform, by involving a wide range of disciplines (and European research centres) at an early stage.

Of course, it also represented an opportunity for those present to network and make useful contacts for their own future collaborations (e.g. Horizon 2020 consortia).

In order to achieve these aims the agenda included participant introductions and scene-setting keynotes in the morning, to place discussions in context, before moving on to three varied activities in the afternoon, each of which fed into a specific SHAPE ENERGY output: (1) the SHAPE ENERGY Lexicon; (2) the Research & Innovation Agenda 2020-2030; and (3) priorities for future energy-SSH research, e.g. as part of future Horizon 2020 calls. For the full agenda, see Appendix 1. We note also that participants were made aware of how data from the day would be used and signed a workshop consent form upon arrival.

Following a welcome and introduction to the day from the organisers, participants introduced themselves using a timed slide deck, where each attendee spoke for a maximum of 90 seconds, with 1 slide which they had sent in advance. These 'speed' introductions highlighted the diversity of expertise in the room. The rest of the morning was dedicated to two keynote presentations. The first from Prof. Benjamin Sovacool (Editor-in-Chief, Energy Research & Social Science) entitled *'Energy studies and the necessity of interdisciplinary and inclusive research'*. Energy Research & Social Science, since its launch in 2014, has rapidly become a go-to journal for social scientists working in energy. In his talk, Prof. Sovacool explored the dominance (in both research and practice) of seeking technological solutions to energy problems, which can ignore the role of social processes. Such social processes are critical in helping determine technology acceptance and use, shaping the risks such technologies can present, as well as offering opportunities for achieving energy policy goals with existing (rather than future) technology. Moreover, many assessments ignore the often hidden ethical, moral, or social justice implications of energy technology and infrastructure. The fundamental argument of the keynote was that realising a future energy system that is low-carbon, safe, and reliable will require fuller and more meaningful collaboration between the physical and social sciences.

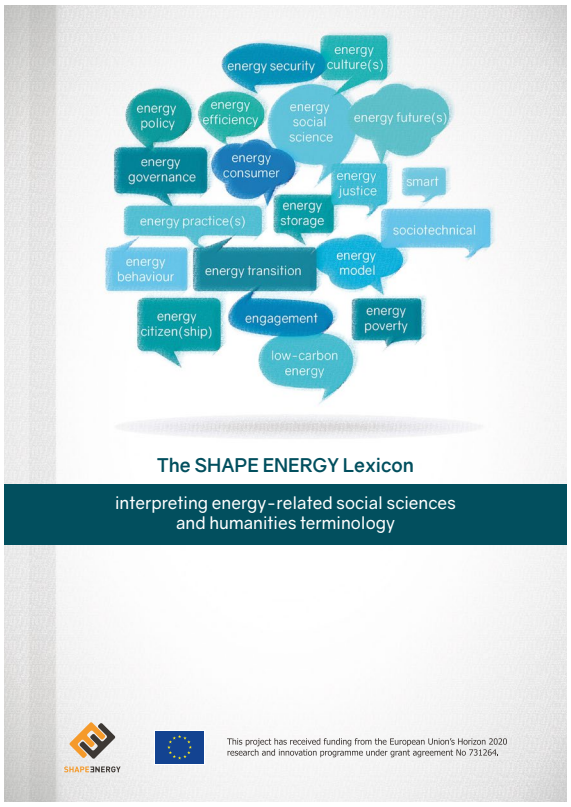
The second keynote was pre-recorded by SHAPE ENERGY Project Officer[8] Dr Gerd Schönwälder - Policy Officer within the Energy Directorate of the DG Research & Innovation of the European Commission (EC). Dr Schönwälder spoke on the topic of *'Energy-SSH within H2020'*, outlining how the Horizon 2020 energy work programmes seek to achieve the 'Energy Union' objectives of secure, sustainable and affordable energy. SSH angles are critical to these challenge-based objectives - the energy transition is not just a technical problem but a societal transformation, and Dr Schönwälder outlined some of the strategies the EC has implemented regarding, for instance, the mainstreaming of energy-SSH research to help achieve this. In this way, this keynote sought to briefly explore the EC's expectations and hopes from the wider energy-SSH research community, thus laying out the context

8 In H2020 projects, the Project Officer has oversight of the management of the project and the coordinator reports to them.

in which the SHAPE ENERGY Platform was funded. The EC hopes, through SHAPE ENERGY and other initiatives, to foster greater collaboration, address current fragmentation across different research communities, and tackle the resultant underrepresentation of SSH experts in energy policymaking. Dr Schönwalder's presentation was followed by a live link-up to his colleague, Dr Karina Firkavičiūtė, to answer questions.

A networking lunch was held after the two keynotes.

4. Creating an interdisciplinary 'energy lexicon'



Words help shape energy debates and thereby actively contribute to the direction of energy research and energy policy. Yet, words are used very differently across different energy research communities, as well as different sectors (business, policy, media, etc.). The first session of the afternoon involved a two-stage 'lexicon' activity, where we aimed to explore and illustrate such differences, through comparing and contrasting definitions for 20 energy-related keywords and phrases, primarily drawn from Social Sciences and Humanities research. This had also required some contributions from participants in advance: we asked them to suggest up to three energy-related words or phrases that they felt were central to their field or often misinterpreted/used differently; we then selected the 20 most commonly occurring terms to consider in the session. As well as those present at the workshop and all keynote speakers, three further academics (Prof. Kirsten Gram Hanssen, Dr. Karen Parkhill and Dr. Hiroki Shin) contributed words central to their disciplinary perspectives, for potential consideration in the exercise.

Participants were first given 20 minutes to provide their own written definitions to as many of the 20 words as they wished. Subsequently, contributions were discussed in four small groups of 4-6 people, and these discussions were recorded. In designing the workshop methods used here to explore such language differences, our aim was not to undertake a comprehensive analysis of *all* the ways in which a particular term is, or has been, used. Rather, we aimed to develop a useful and detailed illustration of the diversity in the ways energy-related language may be interpreted, as well as build a tool which could be used in other workshop or project contexts, or indeed for teaching purposes. A key point to emphasise is that different understandings (including problem framings) can suggest very different possible solutions to energy challenges, and thus different foci and methods for research.

For much fuller details of the energy lexicon, see the peer-reviewed paper detailing the methodology and research underpinning it[9], as well as the actual Lexicon itself[10], freely available via the SHAPE ENERGY website.

9 Robison, R. and Foulds, C., 2017. Creating an interdisciplinary energy lexicon: Working with terminology differences in support of better energy policy. *In: Proceedings of eceee summer study 2017 - Consumption, Efficiency & Limits.* Presqu'île de Giens, Hyères, France, 29 May-3 June 2017. Stockholm: eceee. 1-267-17, pp.121-130.

10 Foulds, C. and Robison, R., 2017. *The SHAPE ENERGY Lexicon - interpreting energy-related social sciences and humanities terminology*. Cambridge: SHAPE ENERGY. Available via shapeenergy.eu.

5. Research & Innovation Agenda activity

A key output of the SHAPE ENERGY Platform will be its *'Research & Innovation Agenda 2020-2030'* to underpin post-Horizon 2020 energy-focused work programmes. It will highlight how energy-SSH can be better embedded into energy policymaking, innovation and research during the 2020s. The Agenda will describe key challenges, gaps and opportunities for use in the design of future European-level energy work programmes. Signatories from across sectors and disciplines to this Agenda will demonstrate the diverse communities that have fed into and support its recommendations, and the Agenda will be presented at the SHAPE ENERGY EU conference in early 2019 (Brussels). The final Agenda is likely to cover elements related to the current landscape for energy-SSH, as well as how things should or could change in the future to make fuller use of energy-SSH's potential in meeting energy policy challenges.

This workshop exercise was our first exploration (with those external to the project) of the types of statements that the Agenda could encompass, as well as the ways in which these could be developed further (through e.g. engaging with other communities). Accordingly, and after a short opening presentation for context, this exercise was based around three direct questions on the topic, to which participants provided written answers on post-its, before being able to wander round to view other people's answers and thus informally discuss them. The questions were:

> Q1. What could be in an energy-SSH Research & Innovation Agenda for 2020-2030?
>
> Q2. What methods could help feed in that agenda?
>
> Q3. What (specific) groups or networks may be interested in the agenda? *(NB. A related question was given on the workshop feedback form, asking participants to identify networks that may be interested in the SHAPE ENERGY Platform. The specifically named organisations and individuals then fed into the project's external communications plans.)*

Here we provide a brief overview of seven key themes from these post-it responses. As is evident the responses were very much interlinked, and thus they are not separated by question.

- **Reflections on disciplinary difference, and multiple meanings**
  First there was an acknowledgment of differences that exist between disciplines, and that arguably greater understanding is needed of these differences (What makes them different? What kinds of questions do different disciplines ask?). Disciplines themselves are not always distinct, and individual researchers may have complex relationships with multiple disciplines. There was also recognition of the need to explore possible definitions of energy-related terminology, and indeed the multiplicity of such definitions (as perhaps prompted by the SHAPE ENERGY Lexicon activity).

- **Reflections on interdisciplinarity**
  Relatedly, there were many calls for greater interdisciplinarity, which of course was one of the core rationales behind the workshop itself. Questions of such 'integration' between disciplines involved requests for *"more room for social sciences contribution. Energy transition should not be only driven by science and technology"*. Yet such interdisciplinarity cannot mean simply 'adding' different disciplines together, there are underlying tensions and disagreements that may need to be acknowledged, and integration may not always be possible.

- **Highlighting the relevance of SSH, including at the foundational stages of energy projects**
  A sentiment which was echoed at other moments in the day, was that: *"Energy-SSH should (ideally) not be a bolt-on to technical projects"*. In order to embed energy-SSH earlier on when working with technical partners, clearer communication may be needed identifying *"what are the problems SSH hopes to solve?"*. Of course, as per the previous bullet point, social sciences and humanities do not represent one homogenous group, and thus using the plural, 'problems', is key here. The importance of raising the profile of SSH was also linked to recognition that it currently receives less funding than technical disciplines.

- **Promoting the role of SSH, and interdisciplinary working, in energy-related education**
  The possibility of further work on *"educating students from an interdisciplinary perspective"* was raised. Education at many levels was mentioned, from primary school through to higher education and beyond. Furthermore, given how there has been (and still is) a growing push for university education to be grounded in ongoing cutting-edge research, this inevitably has implications for how educators themselves engage in the doing of interdisciplinary research.

- **Variety in future research topics, and recognition that some topics have received more attention to date**
  Whilst the Research & Innovation Agenda (being only 1-2 pages in length) cannot detail all the different research directions possible over the next decade (and very many were raised both through this exercise and the following workshop activity), it will be important for the Agenda to recognise there is a wide variety possible here, and in particular emphasise areas which have been more or less dominant (and across which geographies and time periods).

- **Innovation in the evaluation of research (with implications for its funding)**
  "Governmental innovations on evaluations", development of new metrics and *"wider participations in experts' panels"* are all ways in which the evaluation of project outcomes and outputs (pre- and post-funding) could be enhanced. There were also calls for acknowledgement that, fundamentally, the evaluation tools one chooses will shape the form of project one achieves.

- **The importance of wide participation, and linked ethical considerations**
  A need for *"more attention for public participation in energy transition on local to global levels"* was highlighted. Indeed, as recognised through the responses to Q3., there are a wide variety of professional and non-professional groups with a stake in this work, whose needs should be taken into account. As well as reinforcing the importance of many of the sectors that the SHAPE ENERGY activities are based around, Q3. also provided an opportunity to tap into the participants' own knowledge of key networks. It is perhaps unsurprising then that the core foci of the Platform emerged as a key theme, i.e. the need to involve universities (including PhD researchers), industry and SMEs, policy-related organisations (including local authorities), NGOs, and citizens / consumers. Narrowing down within these, participants also usefully highlighted the relevance of: National Funding Agencies; Social Science professional societies; non-energy related groups (e.g. health, telecommunications); and networks with a specifically interdisciplinary or transdisciplinary approach. Many of these groups will be taking non-research approaches to energy challenges, and, relatedly, *"a combination of top-down and bottom-up approaches in shaping research and influencing future energy policy"* was seen as critical. Lastly, it was noted how working with different communities will often raise ethical questions, which again some SSH researchers feel should actually be embedded centrally within project design (cf. the EU's guidelines on Responsible Research & Innovation[11]).

Other streams of data feeding into the SHAPE ENERGY Research & Innovation Agenda 2020-2030 include, in particular, our Call for Evidence results: a survey with over 200 respondents from across sectors that ran between April and July 2017[12].

11 See https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation.

12 Foulds, C., Robison, R., Balint L. and Sonetti, G., 2017. *Headline reflections - SHAPE ENERGY Call for Evidence.* Cambridge: SHAPE ENERGY.

6. Future energy-SSH research priorities

The purpose of this final session of the day was both to provide the European Commission with potential in-depth ideas for the framing of the next energy[13] work programme's SSH projects (equivalent to LCE-31-2016/2017 and LCE-32-2016 in the previous work programme, from which SHAPE ENERGY was funded), and to provide a forum for participants to hear more about each other's research interests. The H2020 work programmes go through multiple stages of drafting before being finalised, and funding calls launched for projects; outputs from this session were sent to the EC just before the first full-text draft of the energy work programme was sent out to EU delegates for review.

For this activity, there were three separate stations, from which the participants could choose to attend two in turn (for 20 minutes each). These were entitled:

1. Priority in-depth areas within individual and collective energy choices.
2. Priority in-depth areas within structures and frameworks surrounding energy.
3. Overlooked and emerging objects of study: ideas for empirical areas where such questions can be practically studied. This also included questions of conceptualisations which are missing from the divisions in groups 1 and 2[14].

Each station had a facilitator from the SHAPE ENERGY team, with notes being taken on flipcharts and the discussions also audio recorded. From these data, very soon after the workshop, the key topics were written up and sent in report form to the EC (the report was also sent to all participants for comment, following which it moved from a 'preliminary' to 'final' version). The topics and themes which emerged are given here in brief, but for the full report sent to the EC in March 2017, with detailed descriptions of the subheadings below, see Appendix 2.

1. Priority in-depth areas within individual and collective energy choices

i. Critical examinations of the relationship(s) between 'individual' and 'collective' choices
ii. The roles of power and justice in choices
iii. Revisiting the very existence of 'choices', and exclusion from choices
iv. Choices to reduce high-carbon industries, and the consequences
v. Low-carbon choices and working patterns

2. Priority in-depth areas within structures and frameworks surrounding energy

i. Policy development
ii. Institutions
iii. Social processes and structure

3. Overlooked and emerging objects of study

i. Politicisation of energy research
ii. Resilience of knowledge-producing systems
iii. Non-mainstream alternatives
iv. Going beyond energy

13 Horizon 2020 societal challenge 3 on 'Secure, Clean and Efficient Energy'.

14 Originally, station 3. had been envisaged as two separate topics, however it was deemed in actuality to be more fruitful to merge them.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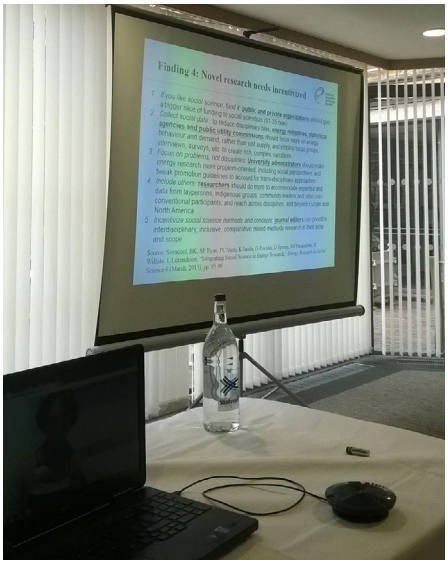
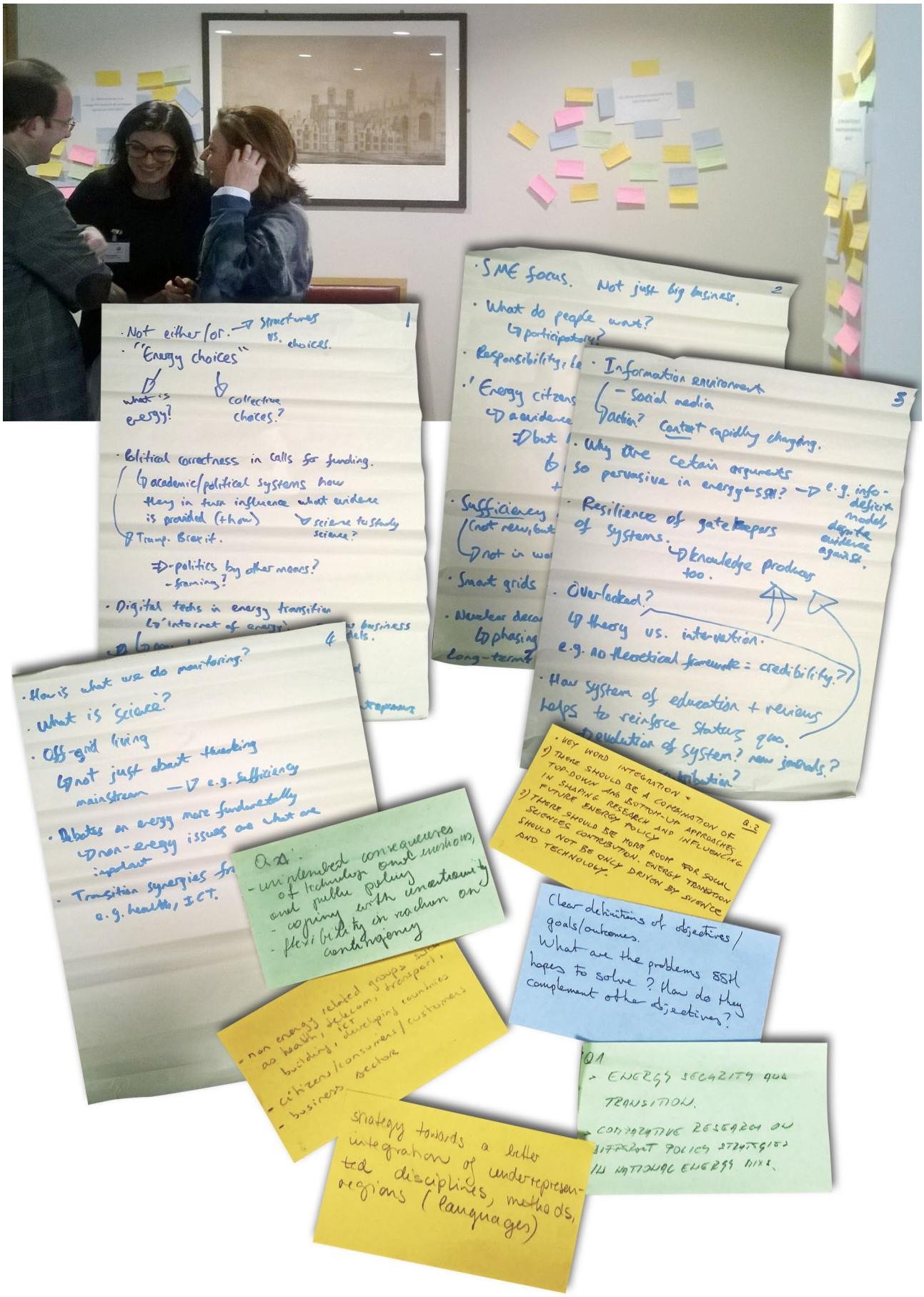

Finding 4: Novel research needs incentivized


SME focus. Not just big business.
What do people want?
Information environment
Why are certain arguments so pervasive in energy-SSH?
Resilience of gatekeepers of systems.
Overlooked?
How system of education + reviews helps to reinforce status quo.
Political correctness in calls for funding.
Not either/or.
"Energy choices"
Digital techs in energy transition
How is what we do monitoring?
What is 'science'?
Off-grid living
Debates on energy more fundamentally
Transition synergies
Q2:
- unintended consequences
- coping with uncertainty
- flexibility in relation to contingency
- non energy related groups
- citizens/consumers/customers
- businesses
Clear definitions of objectives / goals/outcomes.
What are the problems SSH hopes to solve? How do they complement other disciplines?
Q1
- ENERGY SECURITY and TRANSITION
strategy towards a better integration of under-represented disciplines, methods, regions (languages)

7. Summary

In summary, this workshop involving around 30 leading academics enabled in-depth discussion of topics of key relevance to the SHAPE ENERGY Platform. These topics included: interdisciplinary interactions; gaps and opportunities for how energy-SSH is included in the wider European energy landscape; and promising or critical future research directions for Europe.

Participant make-up gave excellent representation from across disciplines and European regions, as well as gender balance. Participant feedback was extremely positive, including comments on the *"impressively diverse group"*, *"great mix of expertise in room"*, and *"interesting activities and variety throughout the day"*. There was recognition that there are more 'social science' disciplines active in this area than humanities, and hence one could imagine going even deeper in a dedicated energy-humanities (or, indeed, energy-social sciences) specific event. In fact - as per the positive feedback - many said it could have been longer, however this would have been unlikely to attract the same calibre of attendees due to busy schedules.

The links made early in the project via this workshop have already proved fruitful in a number of other ways. For example, workshop attendees have participated as keynote speakers in the SHAPE ENERGY PhD summer school in June 2017, members of attendees' project consortia have acted as reviewers for SHAPE ENERGY outputs, many attendees are part of our online searchable SSH-researcher database, and other relevant materials have been circulated amongst the workshop group for feedback and to stimulate dialogue.

Analysis and publication of two streams of the data collected at the workshop have now been completed (the Lexicon, and discussions of future research directions). One is still to come: the Research & Innovation Agenda 2020-2030 (project deliverable 4.4.), which will be drafted in the coming months before being open to signatories throughout the remainder of the project.

This workshop formed part of our scoping work at the start of the SHAPE ENERGY project and the full involvement of all workshop participants helped lay the groundwork for the core activities of the project, including multi-stakeholder workshops in cities across Europe, PhD internships within EU projects, think pieces, a research design challenge, and final conference. In particular, through engaging with the wider European research community, the SHAPE ENERGY academic workshop has already produced valuable tools and outputs focussed on strengthening interdisciplinary and energy-SSH research across Europe.

8. Acknowledgements

We are extremely grateful to all the scholars who contributed to the workshop. In addition to the attendees and keynotes, Prof. Kirsten Gram-Hanssen, Dr Karen Parkhill, and Dr Hiroki Shin fed into the activities prior to the workshop, including by contributing suggestions for consideration in the SHAPE ENERGY Lexicon. Our sincere thanks also to Steven Ward, who assisted with data input and analysis from the Research & Innovation Agenda activity, and to Katrin Buchmann who provided very helpful comments on an earlier version of this report. The SHAPE ENERGY project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731264.

9. Appendices

9.1. Appendix 1. Full workshop agenda

Thursday 23rd February

1800: **Dinner. Bill's, 34-35 Green Street, Cambridge, CB2 3JX**

1930: **Climate Change - a Race Between Physics and Politics**
Lecture by Baroness Bryony Worthington, as part of the Climate Lecture Series 2017. In: Winstanley Lecture Theatre, Trinity College Cambridge.

Friday 24th February

Beves/Saltmarsh Rooms, King's College, Cambridge, CB2 1ST.

0930: **Registration and refreshments**

1000: **Welcome and introduction to SHAPE ENERGY**

1030: **Introductions**

90 second speed introductions from each workshop participant, one PowerPoint slide per person.

1115: **Refreshments break**

1130: **Keynotes**

1130: Dr Gerd Schönwälder, European Commission – 'Energy-SSH within H2020'

Abstract: This keynote will discuss the Horizon 2020 Energy Work Programmes and the strategies the European Commission (EC) has implemented regarding mainstreaming energy-SSH academic research. What underlies the energy-SSH calls in the current Work Programme? What challenges have been recognised? And what, for instance, does the EC hope to gain from establishing a new energy-SSH Platform? Ultimately, what are the EC's expectations and hopes from the energy-SSH research community?

Followed by live link-up to Gerd's colleague, Dr Karina Firkavičiūtė, to answer questions.

1200: Prof. Benjamin Sovacool, University of Sussex – 'Energy studies and the necessity of interdisciplinary and inclusive research'

Abstract: A series of biases continue to handicap the energy studies field. Researchers often promote technological solutions to energy problems while ignoring the social processes that determine their acceptance and use, shape the risks they can present, and offer opportunities for achieving energy policy goals with existing technology. Moreover, many assessments ignore the often hidden ethical, moral, or social justice implications of energy technology and infrastructure. This presentation therefore reflects on the state of the energy studies field, and it proposes recommendations for better integrating social science into energy research. Its fundamental argument is that realizing a future energy system that is low-carbon, safe, and reliable will require fuller and more meaningful collaboration between the physical and social sciences.

1250: **Lunch break**

1330: Creating an interdisciplinary 'energy lexicon'

Language shapes the practices and processes of energy research and policy. It can therefore be challenging that each disciplinary community has its own taken-for-granted terminology. There will be a short task followed by breakout group discussions as part of developing an 'energy lexicon' as a basis for interdisciplinary collaboration and a transparent platform for policy discussion.

1430: Research & Innovation Agenda activity

An opportunity to influence the direction of the SHAPE ENERGY Research & Innovation Agenda, which seeks to bring energy research communities around a small set of succinct goals, as part of influencing the direction of the European Commission.

1500: Refreshments break

1515: Future energy-SSH research priorities

Discussions on which areas of energy research have been most productive/overlooked (e.g. in terms of disciplines, topics, European countries), the implications of this for Europe, and possible future priorities for in-depth energy-SSH research. Outputs from this will be fed back to the European Commission.

Areas to choose from (there will be an opportunity to cover more than 1):

1. Priority in-depth areas within *individual and collective energy choices*.
2. Priority in-depth areas within *structures and frameworks surrounding energy*.
3. Conceptualisations which are missing from the divisions above?
4. Overlooked and emerging objects of study: ideas for empirical areas where such questions can be practically studied (e.g. cities).

1645: Closing and next steps

Next steps and ways to keep in touch with the SHAPE ENERGY Platform.

1715: Evensong (1730-1815)

Evensong is a traditional choral service held at many of the Cambridge colleges, and King's College Cambridge is particularly famous for its male voice choir. The service on Fri 24th Feb will include music by Bach, Byrd, Palestrina and Bruckner. It is a Christian service but those of all faiths or none are very welcome to attend. Evensong is inside King's College Chapel, one of the most popular tourist destinations in Cambridge.

1900: Dinner. The Punter, 3 Pound Hill, Cambridge, CB3 0AE.

9.2. Appendix 2. Future energy-SSH research priorities report

Future energy-SSH research priorities

Prepared by: Chris Foulds, Rosie Robison, Aled Jones; Global Sustainability Institute, Anglia Ruskin University, UK. Sent to European Commission on 9 March 2017.

Background and approach

Session purpose:

The purpose of this session at the SHAPE ENERGY academic scoping workshop (24 Feb 2017) was to provide Gerd and colleagues with potential in-depth ideas for the framing of the next energy work programme's LCE-31-2016/2017 equivalents. Whilst this was mentioned to the participants for context purposes, we were very clear that our role was only about idea generation and that no-one would be directly influencing the work programme itself.

Session structure:

The original plan was for there to be the following four stations, from which the participants could choose to attend two (for 20mins each):

4. Priority in-depth areas within individual and collective energy choices.
    - *inspired by LCE-31-2016*
5. Priority in-depth areas within structures and frameworks surrounding energy.
    - *inspired by LCE-31-2017*
6. Conceptualisations which are missing from the divisions above?
    - *inspired by reflections on the coverage / blind spots of LCE-31-2016 and LCE-31-2017*
7. Overlooked and emerging objects of study: ideas for empirical areas where such questions can be practically studied.
    - *inspired by acknowledging the first three were about the conceptualisations of problems (how to study? what themes to prioritise?), rather than what those problems actually are (what to study? are there topics missing?)*

However, station 3 was not popular enough and so was merged with station 4. This is worth noting because it immediately suggests that the research community is broadly content with the EC's division of the SSH disciplines across the LCE-31-2016 (station 1) and LCE-31-2017 (station 2); few wanted to discuss whether anything was missing outside of individual/collective choices (predominantly micro) and governance frameworks (predominantly macro). Relatedly, one key point that was regularly recognised was that it was very difficult indeed (impossible even?) to separate out choices and actions from the governance structures in which they are situated – this is reflected by the considerable number of interconnections across each of our station summaries.

What is included in this document?:

We provide a high-level one-page summary for stations 1, 2 and 4. Please note that there were numerous other ideas raised – which we can also provide for completeness, if of interest – but these have been excluded here as they seemed to either generate less interest or did not fit within the broader emergent themes presented herein.

Priority in-depth areas within individual and collective energy choices

This discussion often centred around the notion of 'choice'. This discussion group had time to note which specific ideas were of the most interest – these are underlined within each of the five areas raised.

1. ***Critical examinations of the relationship(s) between 'individual' and 'collective' choices***

- It can be argued there is an over-emphasis in current research on the individual, which may be linked to modern cultural promotion of individual choice. In this context, one can ask how (dis)connected individual behaviour choices and collective social phenomena are (a society may be composed of many 'green-minded' individuals, but still collectively have high reliance on fossil fuels); and whether over-emphasis on the former may yield poor results in the latter.
- Very much relatedly, more could be done to examine the links *between* the individual and collective; the separation of these is sometimes linked to disciplinary traditions.
- There are (political, ethical/value-related) questions to be asked around how much choice should be, or is being, devolved to individuals in matters of low-carbon energy.

2. ***The roles of power and justice in choices***

- Linked to the final bullet point under number 1, power relations and their role in low-carbon energy choices were raised.
- How could/should considerations of global justice affect energy-related choices?

3. ***Revisiting the very existence of 'choices', and exclusion from choices***

- What is the space where choices actually exist? Sometimes there seem to be 'no choice' situations (whether one takes that as 'reality' or 'perception'). Can one 'self-exclude' from choices, by deeming them completely closed options (or not even consciously considering them at all)?
- (Social) exclusion from green lifestyles. Are some groups 'condemned to inefficiency', e.g. through lacking the capital to generate their own energy? Linked to social inequality issues.

4. ***Choices to reduce high-carbon industries, and the consequences***

- Whilst much (research) attention has been paid to the increase in renewables, there has been less on reducing fossil fuel use, and the impacts of this on e.g. labour/jobs, freedoms, communities. Such 'painful' choices could be worthy of greater examination.

5. ***Low-carbon choices and working patterns***

- Implications for lower-carbon lifestyles on issues such as working hours, and vice versa, productivity. In this context, it is also important to identify and explore the applicability of alternative indicators (to GDP) that better account for the low-carbon transition.

Priority in-depth areas within structures and frameworks surrounding energy

There are numerous ways to explore interventions in the structures and frameworks associated with energy behaviour. Here we look at three different lenses through which projects could be framed.

1. *Policy development*

- As energy transitions in Europe (and over the world) will take decades, research into administrative vs political power will help to understand how to embed longer-term change into policy development. For example, how to get long-term energy plans that last beyond democracy electoral cycles? Research in this area should cover both radical and incremental change, as well as look at the consistency of directives from different policy domains.

2. *Institutions*

- Institutions play a vital role in energy system transitions. Understanding their function, culture, influence and impact is vital. In particular, the integration between institutions around particular societal changes needs to be better captured. The link between national priorities and EU objectives and their interplay through institutions is also of interest. Institutional competencies to address the range of energy behaviours should be mapped.
- Institutional research should cover: (a) comparative studies at national/EU levels; (b) systems analysis of institutional influence on energy behaviours; (c) divergent national institutions and citizen energy expectations/understandings; (d) EU institutions post-Brexit; (e) EU and Energy Union institutions - overlap and separateness.

3. *Social processes and structure*

- An overlooked barrier for the energy transition is the social processes associated with industry phase-out. As the energy system transitions away from fossil fuels, how do individuals, communities and institutions respond to the closing down of industries and sectors?
- The evolution of the 'prosumer' (producer-consumer) within the EU is also a gap in knowledge. How do fiscal policies, incentives, social pressures including hidden social pressures, or discourses, interact to change energy behaviours?
- Research into citizen engagement and empowerment is needed. A focus on participatory approaches may benefit from: (a) defining problems; (b) contributing to solutions; (c) evaluating.
- The physical and structural barriers to energy behaviours need to be better modelled across Europe. The interplay of choice and physical infrastructure is not well captured. For example, would an Amsterdam cyclist in Budapest still cycle and have a low energy footprint lifestyle? The attribution of choice and how to enlarge the set of options within the constraint of existing physical infrastructure should be researched.
- The role of education and education policy should not be underestimated; both direct curricula education and the social practices developed through early years and childhood.
- The measurement of social and intangible aspects needs careful consideration, including social impact measurement. New frameworks are likely to be needed to explore choices, as capturing different perspectives is essential. For example, the perspective around thresholds of suffering (such as energy poverty) may not be consistent across Europe.

Overlooked and emerging objects of study

This discussion looked at topics (or sites/objects of potentially novel empirics) that either (1) are so new and emerging that there has not yet been time to fund research on them, or (2) have been traditionally overlooked by academic communities, to their detriment and to the detriment of policy. Much of the discussion focused on the overlooked influences behind (future) energy-SSH research.

1. ***Politicisation of energy research***

- How does the organisation of political systems influence what evidence is provided and how? What is the impact of how existing politics frame the various energy challenges?
- The current populist trend (e.g. Brexit, Trump) needs to be studied; reasons for it (past) and implications for European energy (future).

2. ***Resilience of knowledge-producing systems***

- Why are certain arguments so pervasive in energy-SSH / energy policy? E.g. decades of evidence has shown the information-deficit model to be false, yet it still dominates.
- How is research done, and what is it that makes evidence 'credible' for energy policy? E.g. how is 'theory' treated by policymakers?
- What role do certain gatekeepers play in influencing what evidence is generated, and how it is subsequently used (or not)?
- How do systems of publishing serve to reinforce the status quo, and what could be done to foster more innovative lines of thinking (for the benefit of policy)? E.g. what is regarded as a 'contribution' in journals? How does the review process inherently (pre-)select certain forms of knowledges, and with what consequences? What role for new journals?

3. ***Non-mainstream alternatives***

- There is a need to research ideas and initiatives that intentionally go against mainstream thinking and/or may (at least currently) not be politically palatable. Examples include: study 'off-grid living' more, rather than implicitly assuming that all possible futures will involve being 'on-grid'; sufficiency (having *enough* to meet one's needs) is never explicitly mentioned in funding calls, instead efficiency (getting *more* from less) dominates; and long-term nuclear decommissioning receives too little attention.
- Relatedly, there is too little research on the role/influence of SMEs. Too much weight was said to be placed on (mainstream) big businesses.
- Issues of 'scaling up' – how can niche ideas go 'mass market' / be mainstreamed?

4. ***Going beyond energy***

- Much to be learnt from the past transitions of other systems, e.g. health or ICT.
- Research is increasingly acknowledging that (non-energy) policy areas – whether it be to do with housing, benefits, health services, etc. – have major implications for the consumption of energy. Yet, relatively little research has been done on these interconnections; too much has / is being done on 'energy policies' that deliberately target the energy sector only.
- Energy citizenship was recognised as being 'good' by the group (plenty of evidence on that), however there is very little evidence on how to actually *do* energy citizenship. It was noted that fundamental ideas underlying citizenship also start to take us away from energy.

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